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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 10/760,397 | 01/21/2004 | Helmut Preisach | Q79429 | 1308 |
| 23373 | 7590 | 04/25/2006 | EXAMINER | |
| SUGHRUE MION, PLLC 2100 PENNSYLVANIA AVENUE, N.W. SUITE 800 WASHINGTON, DC 20037 | | | VAN ROY, TOD THOMAS | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2828 | |

DATE MAILED: 04/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/760,397

Applicant(s)

PREISACH, HELMUT

Examiner

Tod T. Van Roy

Art Unit

2828

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 March 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 5-10 is/are rejected.
- 7) ☒ Claim(s) 4 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 March 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

The drawings were received on 03/01/2006. These drawings are accepted.

Response to Amendment

The examiner acknowledges the amending of claims 4 and 10.

Claim Objections

The objection of claims 4 and 10 is withdrawn due to the current amendments.

Response to Arguments

Applicant's arguments, see Remarks, filed 03/01/2006, with respect to claims 1-10 have been fully considered and are persuasive. The rejection of the claims has been withdrawn.

The examiner agrees that it is not clear that the laser diode is direct current coupled through resistor #34, and the office action is subsequently made non-final.

The examiner does believe that DC coupling exists at least through inductor #40. As the applicant has stated (Remarks, pg.7 para.3), the inductors are mainly used for DC current, and hence can be considered DC coupled to the laser diode. The applicant has stated various modes of operation that influence the AC/DC coupling in the circuit, however the claims do not state any modes of operation, just that the proper AC/DC coupling can exist.

Please see below for an updated rejection to the claims.

Also, the applicant has made reference in the Remarks to an attempted combination of figs. 4 and 10 of Fattaruso (col.4 lines 15-20) by the examiner. The reference to this passage was not made in an attempt to motivate a combination of the two embodiments, but was merely an attempt to explain why Fattaruso was referring to fig.3 as AC coupled, and fig.10 as DC coupled (i.e. pointing out the difference between the two embodiments).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1 and 7-8 are rejected under 35 U.S.C. 102(e) as being anticipated by Fattaruso (US 6792019).

With respect to claims 1 and 7, Fattaruso discloses a circuit for driving a semiconductor laser comprising a differential amplifier (fig.3 formed of #58, 60, 34, 30) for driving a semiconductor laser directly, a first output of the differential amplifier being direct current coupled to a first terminal of the semiconductor laser (fig.3, diode in general is described as being alternating current coupled in the spec, col.4 lines 15-20,

Art Unit: 2828

but this is in reference to the capacitor connection, anode is direct current coupled through at least inductor #40) and a second output of the differential amplifier being alternating current coupled to a second terminal of the semiconductor laser (fig.3 cathode alternating current coupled through capacitor #44).

With respect to claim 8, Fattaruso discloses the circuit and semiconductor laser are disposed on spatially separated integrated circuits (col.1 line 16, implying diode is on separate chip), impedance matched lines of the circuit being provided for connecting the semiconductor laser to the circuit (col.1 lines 20-24).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fattaruso in view of Schrodinger et al. (US 2005/0025201).

With respect to claim 2, Fattaruso teaches the driving circuit as outlined in the rejection to claim 1, including the differential amplifier is connected to the second terminal of the semiconductor laser by means of a capacitor, but does not teach a coil and a resistor to be connected in series to ground between the capacitor and diode. Schrodinger teaches a driving circuit for a laser diode wherein a coil and a resistor are connected in series to ground between the capacitor and diode (fig.5 R2, L2). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the driving circuit of Fattaruso with the coil and resistor connection of Schrodinger in order to attenuate the signal and compensate for parasitic capacitances (Schrodinger [0032]).

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fattaruso in view of Mukherjee (US 6226322).

With respect to claim 3, Fattaruso teaches the driving circuit as outlined in the rejection to claim 1, but does not teach the use of variable resistors connected in parallel with the resistors of the differential amplifier. Mukherjee teaches a communications circuit in which parallel variable resistors are used with differential amplifiers (fig.15 Rf). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the driving circuit of Fattaruso with the resistors of Mukherjee in order to balance the amplifier gain as need for proper output (Mukherjee, col.28 lines 42-50).

Claims 5-6, and 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fattaruso in view of Giles (US 4612671).

With respect to claim 5, Fattaruso teaches the driving circuit as outlined in the rejection to claim 1, including the current inputs (col.2 lines 58-62) but does not teach the use of analog to digital converters. Giles teaches a laser driving circuit that uses A/D converters (fig.1) at the inputs of the differential amplifier. It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the driving circuit, with current control, with the D/A converters of Giles in order to make the amplifier and current source controllable from an outside controlling chip (Giles, abs.).

With respect to claim 6, Fattaruso and Giles teach the driving circuit outlined in the rejection to claim 5, and Giles additionally teaches the use of a microprocessor for executing a program to drive the circuit (Giles, abs.). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the driving circuit of Fattaruso and Giles with the microprocessor of Giles in order to execute various programmable methods for controlling the laser diode.

With respect to claims 9-10, Fattaruso teaches the driving circuit outlined in the rejection to claim 1, but does not teach a method of controlling the laser under specified events. Giles teaches a laser driving circuit which controls the laser diode by: the circuit measuring characteristic curve data, determining a starting value from the data, the data being determined by varying the start up value as a function of a desired characteristic quantity of the laser (col.3 lines 15-30); and teaches performing the method on a periodic basis to monitor for faults (col.3 lines 59-65). It would have been obvious to one

Art Unit: 2828

of ordinary skill in the art at the time of the invention to combine the laser driving circuit of Fattaruso with the controlling methods of Giles in order to provide for routine maintenance checks of the diode, and to add a degree of automation to the system.

Allowable Subject Matter

Claim 4 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

Claim 4 is believed to be allowable based on the fact that a differential amplifying laser driver circuit having the specified coupling inputs, as well as the claimed coil, resistor, ground placement (between the laser terminal and capacitor), and additionally the further series connection of a coil, two diodes and a resistor placed specifically between the second output of the differential amplifier and the capacitor, was not found to be obvious over the prior art.

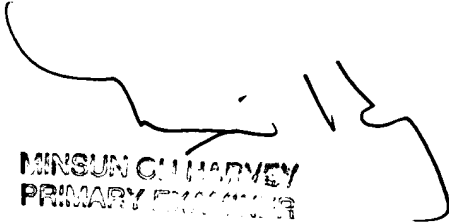
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tod T. Van Roy whose telephone number is (571)272-8447. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Minsun Harvey can be reached on (571)272-1835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TVR



MINSUN G. HARVEY
PRIMARY EXAMINER